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Comparison of kinetic, fluid and global modeling of rf discharges at amospheric pressure[1] TORBEN HEMKE, DENIS EREMIN, RALF PETER BRINKMANN, THOMAS MUSSENBROCK, Ruhr-Universitaet Bochum — Modeling and simulation of microplasmas is an important key for understanding their physical properties. In particular, not all available plasma diagnostics are applicable to the small dimensions of microplasmas. Thus, theoretical approaches offer in many cases the only way to gain physical insight. The general modeling simulation techniques are kinetic, fluid and global models. In this order they decrease in computational effort, but also in physical accuracy. The computational costs have espescially to be taken into account when dealing with large sets of particle species and chemical reactions. In this contribution, we report on different implementations of the three different modeling approaches for (1d) rf driven micorplasmas at atmospheric pressure in a helium-nitrogen mixture. In conclusion, we show the benefits and limitations of each simulation technique.

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Torben Hemke
Ruhr-Universitaet Bochum

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